



Chapter 14 – Confusion

NOTE: CONTENT CONTAINED IN THIS DOCUMENT IS TAKEN FROM ROSEN'S EMERGENCY MEDICINE 9th Ed.

Italicized text is quoted directly from Rosen's.

Key Concepts:

1. *Confusion is a symptom, not a diagnosis.*
2. *Focal cortical dysfunction, such as from tumor or stroke, typically does not cause confusion.*
3. *Any underlying clinical process that disrupts optimal central nervous system (CNS) functioning can result in confusion.*
4. *Emergent causes of confusion that need immediate detection and treatment include hypoglycemia, hypoxemia, hypotension, sepsis, and toxic ingestions.*
5. *Assessment of attention is fundamental for the assessment of patients with confusion.*
6. *The confusion assessment method (CAM) is a validated tool for identifying patients with delirium.*
7. *Delirium often goes unrecognized unless a structured assessment tool is used.*
8. *Midazolam is useful for managing undifferentiated agitation while the diagnostic evaluation is in progress.*

Rosen's in Perspective

This episode is all about confusion. This is an acute alteration in higher cortical functions (memory, attention, or awareness). Remember to differentiate from coma (unroutable) and stupor (drowsy but routable) - see our last episode for everything you ever wanted to know about altered LOC. **Confusion is a symptom** (like dyspnea, chest pain, etc) that can have a spectrum of severity - this ranges from mild short term memory difficulty to complete inability to relate to the environment, AKA **delirium**. There is evidence that we are not particularly great at diagnosing delirium in the ED. Delirium is essentially acute brain failure, and has significant effects on mortality and morbidity.

According to uptodate - "Mortality associated with delirium is high. A report of pooled results from several studies estimated the one- and six-month mortality to be 14 and 22 percent, respectively, approximately **twice** that of patients without delirium."

https://www.uptodate.com/contents/delirium-and-acute-confusional-states-prevention-treatment-and-prognosis?search=delirium&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2#H180416817



Core Questions:

1. Define confusion.
2. What is your differential diagnosis for the confused patient?
3. Differentiate between organic and functional causes of confusion.
4. What is the Quick Confusion Scale (QCS) and how is it calculated?
5. What is the Brief Confusion Assessment Method (bCAM) and how is it used?
6. What is the Mini-Mental State Examination (MMSE) and how is it scored?
7. What ancillary tests are used when working up the confused patient?
8. What is the role of thiamine in the treatment of the acutely confused patient?

WiseCracks:

1. What simple tests can you use to assess concentration at the bedside?
2. What treatments should be used for the patient with acute hypoglycemia causing confusion?
3. List 5 emergent and 5 critical diagnoses that cause confusion.

Core Questions:

[1] Define confusion.

In our ED - “A symptom of crystal meth use”
Just kidding. Per Rosen’s:

“The term confusion connotes an acute alteration in higher cerebral functions, such as memory, attention, or awareness. The ability to sustain and focus attention is impaired.”

[2] What is your differential diagnosis for the confused patient?

Good ol’ DIMES. However, Rosen’s has a box for critical and emergent causes of confusion which we will run through here (Box 14.1)

Critical

- Failure to oxygenate
- Failure to ventilate
- Hypoglycemia
- Elevated intracranial pressure with impending herniation

Emergent

- Systemic diseases
- Electrolyte and fluid disturbance
- Endocrine disease—thyroid, adrenal



[3] Differentiate between organic and functional causes of confusion.

The following has been adapted from Table 14.1 in Rosen's 9th Edition.

Organic

- History
 - Acute onset
 - Any Age
- MSE
 - Fluctuating level of consciousness
 - Disoriented
 - Attention disturbances
 - Poor recent memory
 - Hallucinations – visual, tactile, auditory
 - Cognitive changes
- Physical Examination
 - Abnormal vital signs
 - Nystagmus
 - Focal neurological signs
 - Signs of trauma

Functional

- History
 - Onset over weeks to months
 - Onset age; 12-40 years
- MSE
 - Alert
 - Oriented
 - Agitated, anxious
 - Poor immediate memory
 - Hallucinations, usually auditory
 - Delusions, illusions
- Physical Examination
 - Normal vital signs
 - No Nystagmus
 - Purposeful movement
 - No signs of trauma



[4] What is the Quick Confusion Scale (QCS) and how is it calculated? (See Figure 14.2)

The final score is the sum of the totals. A score less than 15 indicates altered cognition and need for further evaluation.

The following figure has been adapted from Figure 14.2 in Rosen's 9th Edition.

Item	Score	Weight	Score
What year is it now?	0 or 1 (1 if correct, 0 if incorrect)	X2	
What month is it?	0 or 1 (1 if correct, 0 if incorrect)	X2	
Repeat phrase and remember it: " <u>John Brown</u> , <u>42 Market Street</u> , <u>New York</u> "			
About what time is it? (Answer correct if within the hour)	0 or 1 (1 if correct, 0 if incorrect)	X2	
Count backward from 20 to 1	0, 1 or 2 (2 if correct, 1 if 1 error, 0 if more than 2 errors)	X1	
Say the months in reverse	0, 1 or 2 (2 if correct, 1 if 1 error, 0 if more than 2 errors)	X1	
Repeat the memory phrase (Each underlined portion is worth 1 point)	0, 1, 2, 3, 4, 5 (score 5 if correctly performed; each error drops score by 1)	X1	
		TOTAL	_____


[5] What is the Brief Confusion Assessment Method (bCAM) and how is it used? (See Figure 14.4)

bCAM differs from CAM in that the bCAM allows for early stoppage for positive features. The content of the rule is more or less the same. Memory aid - think **AIDS** -

- **A**cute onset and fluctuating course
- **I**nattention (months backwards)
- **D**isorganized thinking (will a stone float on water)
- **S**ensorium altered/altered LOC (GCS)

CAM/bCAM positive if Feature **1 and 2** plus either **3 or 4** present

[6] What is the Mini-Mental State Examination (MMSE) and how is it scored?

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date of the week? Month?"
5		"Where are we now: State? Country? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until the patient learns all of the, if possible. Number of trials: _____
5		"I would like you to count backwards from 100 by sevens." Stop after five answers. Alternative: "Spell WORLD backwards."
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		Repeat the phrase: "No ifs, ands or buts"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (examiner gives patient a piece of blank paper)
1		"Please read this and do what it says" (Written instruction is "close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks them to draw the symbol below. All 10 angles must be present and two must intersect.)
		
30		TOTAL

In general - score ≤ 23 = cognitive impairment - however adjustments can be made for age, education level, etc.

Not something I am doing in the ED a lot these days, but it is in the book and could potentially be testable.



[7] What ancillary tests are used when working up the confused patient?

To paraphrase the great Dr. Haley Cochrane - what ancillary tests *are not* used when working up a confused patient? It depends!

- Full set of vitals
- Don't forget bedside glucose
- Further testing as directed by history and physical
 - Concern for infection - septic workup
 - CBC, Electrolytes, and renal function
 - VBG
 - Liver function and liver enzymes
 - TSH
 - Cardiac enzymes and ECG
 - Tox assays, co-oximetry if suspicion for ingestions/CO/intoxication
 - CT head if concern for trauma, localizing deficit, mass, etc.
 - LP in certain circumstances (eg negative workup with persistently altered LOC, concern for SAH, meningitis, encephalitis etc).
 - ± inpatient MRI...

[8] What is the role of thiamine in the treatment of the acutely confused patient?

Quick summary from UTD

- Wernicke's encephalopathy is difficult to diagnose
- Untreated - most patients progress to coma and death (or Korsakoff's)
- Thiamine is a safe and inexpensive antidote. (extremely rare AE's include bronchospasm and anaphylaxis).
- Thiamine dosing tips
 - parenteral preferable to oral (more consistent absorption)
 - Dose 500mg IV TID x 2 days then 250mg IM daily x 5 days
 - Administration of glucose without thiamine can precipitate or worsen WE - so give thiamine before glucose.
- The first sign of improvement with thiamine is resolution of ocular signs over hours to days. Gait ataxia resolves typically along with vestibular dysfunction. Confusion resolves over days to weeks.



WiseCracks:

[1] What simple tests can you use to assess concentration at the bedside?

While assessment of confusion or delirium can take up a decent portion of your clinical encounter, you can assess concentration (and thus do a quick screen for confusion) relatively quickly. So, next time you have your next patient that is suspected of being confused, consider asking the following:

- Repeat digits forward and backward
 - The patient should be able to repeat 5-6 digits forward (e.g., “repeat the following digits in the order that I have given them to you: 1,2,3,4,5,6)
 - The patient should be able to repeat 4 digits backward (e.g., “Now, repeat the last four numbers I gave you in reverse order: 4,3,2,1)
- Listing the months in reverse order OR spell a commonly used backward
 - A patient who can sustain concentration should be able to do this with relative ease

[2] What treatments should be used for the patient with acute hypoglycemia causing confusion?

Sugar!

1 amp D50 IV with consideration for infusion if persistently low BGs/rebound hypoglycemia.
Give thiamine at time of glucose administration in the appropriate clinical context.
Feed them when awake (complex carbohydrates and all that good stuff)

[3] List 5 emergent and 4 critical diagnoses that cause confusion.

Critical

- Failure to oxygenate
- Failure to ventilate
- Hypoglycemia
- Elevated ICP with impending herniation

Emergent

- Toxic ingestion/Substance withdrawal
- Infection (esp. meningitis/encephalitis)
- Hypo/hyper calcemia, hepatic encephalopathy, uremia, etc.
- Endocrine disease (thyroid/adrenal)
- Structural brain lesion (stroke/bleed/mass)